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A NEW SPECIES OF *ASHMUNELLA* FROM WEST TEXAS (MOLLUSCA: PULMONATA)

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The first specimens of this new species were collected by our colleague, Dr. J. C. Bequaert, in the Davis Mountains, West Texas, in May and September 1961. All of the specimens were dead shells. During June 1965 live specimens of this species were collected by Dr. J. C. Bequaert and W. B. Miller from which the anatomical drawings were made by the junior author.

ASHMUNELLA BEQUAERTI new species

Plate 1; text figures 1, 2

Holotype: MCZ 260274, taken from a rockslide about $\frac{1}{4}$ mile up a tributary canyon (locally known as Goat Cave Canyon) to Little Aguja Canyon near Buffalo Trail Boy Scout Camp at the base of the northeastern slope of Black Mountain in the Davis Mountains, Jeff Davis County, Texas. Elevation 4,900 ft. (J. C. Bequaert and W. B. Miller, 5 June 1965).

Igneous rockslides line both sides of the canyon, below vertical cliffs; *Ashmunella bequaerti* was found on both sides of the canyon, at elevations from 4800 ft. to 4900 ft., along with *Humboldtiana palmeri* Clench and Rehder, in association with *Quercus texana*, *Q. hypoleucoides*, *Acer grandidentata* and *Rhus trilobata*.

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Paratypes: MCZ 260275 from the same locality.

Height	Greater Diameter	Lesser Diameter	
mm	mm	mm	
3.9	12.2	11.5	Holotype
3.8	13.0	11.7	Paratype
3.7	12.4	11.0	"
3.8	12.2	11.1	"
3.5	11.7	10.5	"
3.4	11.3	10.1	"
3.2	10.7	9.5	"
3.0	10.5	9.3	"

Description: Shell lenticular, slightly convex above, moderately convex below, acutely carinate, widely umbilicate, thin, pale brown. The surface, above and below and into the umbilicus, is sculptured with fine growth wrinkle-striae from which project numerous cuticular scales giving a pilose appearance to fresh clean shells; the scales also extend well into the umbilicus. In live and recently dead animals, the scales usually hold dirt and debris, giving a dusty, dirty appearance to the surface. In older specimens where the scales have worn off, there remain raised hyphen-shaped papillae, parallel to the growth striae, giving a granular appearance to the surface. There are six whorls, the first half whorl of the embryonic shell glossy with only a few incipient radial striae, the remainder with a silken appearance, the fine growth wrinkle-striae and the papillae and scales. The first two and a half whorls are convex; subsequent whorls flattened. Last whorl descends slightly to the aperture and is deeply guttered close behind the outer and basal margins of the lip. The under surface of the body whorl is marked additionally by very fine, microscopic, spiral striae. The aperture is small and very oblique; peristome white to light brown, reflected except near the upper insertion of the lip, the terminations connected by a slightly raised callus. Parietal wall with two teeth, the larger one situated basally, sinuous, diverging posteriorly toward the smaller upper one, thicker anteriorly; the smaller one close to the upper insertion of the lip, raised posteriorly. Outer margin thickened, with a flat-topped rectangular tooth set transversely across the aperture, spanning and overlapping the gap between the parietal teeth. On the basal margin, two longitudinally compressed teeth are connected by a raised ridge along the peristome. Interdental intervals are about equal. The umbilicus,

measured from lower suture of body whorl just behind peristome to opposite side of body whorl in the pit, is contained about four times in the greater diameter of the shell.

The mantle over the lung is clear except for rare, very small groups of light grey pigment spots.

Jaw with ten ribs.

Genitalia. Penis with lower sac short and wide, upper sac longer and narrower. In the upper sac there are three longitudinal ridges, in addition to a small nodule which is attached to the wall of the penis at its junction with the epiphallus. In whole mounts, this nodule gives the appearance of a short verge when seen by transparency; dissection of the penis, however, reveals it as a growth on the side of the penial wall. It is possible that this nodule, together with the tip of the muscular walls of the epiphallus, acts as a papilla when the penis is completely everted. The lower sac has two thickened processes which come together near the lower end and form a constriction within the penial cavity. There is a short penial retractor on the epiphallus which is inserted in the floor of the lung cavity; loose strands of connective tissue connect the penis with base of epiphallus. Talon of the multilobar type. Length of penis 5.0 mm, epiphallus 24.0 mm, flagellum 1.5 mm, penial retractor 1.3 mm, spermatheca and duct 31.0 mm, vagina 4.0 mm, free oviduct 2.5 mm, atrium 1.0 mm.

Remarks: *Ashmunella bequaerti* is the most easterly known species of *Ashmunella* in the U. S. It is most closely related to the *mearnsi* group, in shell characteristics as well as geographically. In paratypes, the spire varies from moderately raised conical to completely flat; the diameter varies from 10.5 mm to 13.0 mm. Its nearest relative appears to be *A. hebardi* Pilsbry and Vanatta, with which it agrees in the lenticular shape of the shell, the sharply carinate periphery, and the general shape of the teeth, including the two parietal teeth. In *A. bequaerti*, however, the shell is generally more flattened, the edge of the parietal callus is appressed and very weak, not raised into a low, free ridge as in *hebardi*, and the upper insertion of the peristome is only weakly descending, nearly straight, not strongly descending as in *hebardi*. Anatomically, the internal nodule at the upper end of the upper penial sac has not been seen or reported in any other *Ashmunella*. It remains to be seen from additional dissections, however, whether this is a consistent characteristic.

The new species is named after Dr. Joseph C. Bequaert, lifelong malacologist and entomologist, who first discovered this

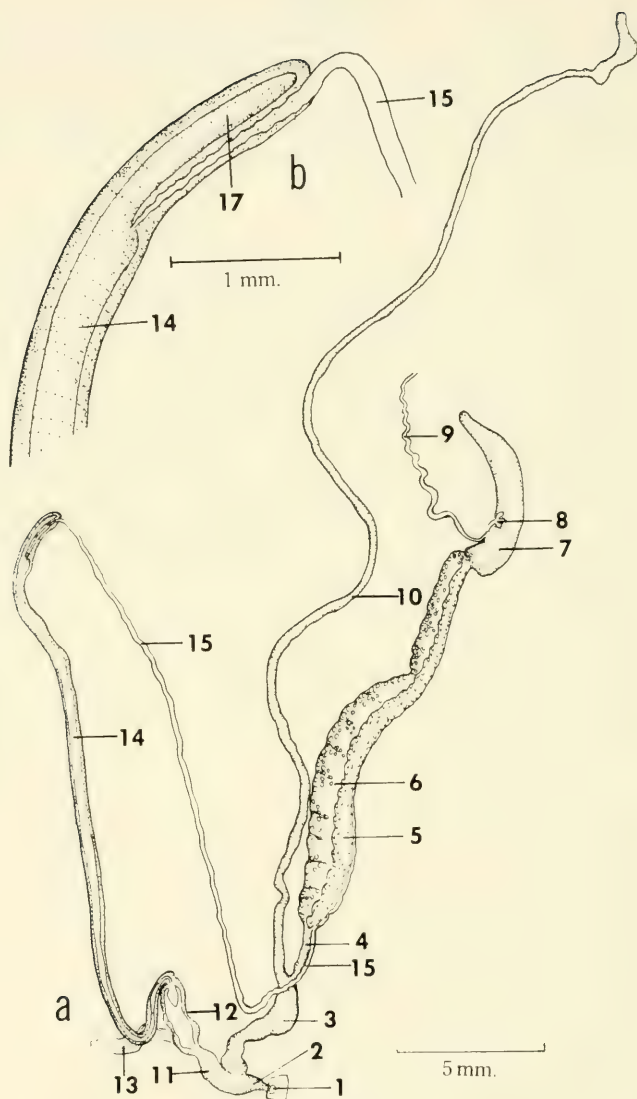


FIG. 1. *Ashmunella bequaerti* Clench and Miller. Dissection of reproductive system with illustrations made from stained whole mount. *a*, Entire system. *b*, Enlargement of the distal end of the epiphallus at its junction with the vas deferens where the two are bound together. This may be called the flagellum portion of the epiphallus. There is no free flagellum.

1, Genital orifice; 2, Atrium; 3, Vagina; 4, Oviduct; 5, Prostate; 6, Uterus; 7, Albumen gland; 8, Talon; 9, Hermaphroditic duct; 10, Spermathecal duct; 11, Lower sac of penis; 12, Upper sac of penis; 13, Penial retractor; 14, Epiphallus; 15, Vas deferens; 16, Connective tissue; 17, Flagellum bound with vas deferens; 18, Penis papilla.

snail on 2 May 1961, obtaining quantities of dead shells but no live animals. On 5 June 1965, he and the junior author returned to the locality and were successful in obtaining 4 live adults and 3 live immatures. Dead shells were very numerous. One of the live adults was designated the holotype. Two others were dissected to corroborate anatomical findings. The fourth live adult and the three live immatures are being kept alive in a terrarium at the University of Arizona, in the hope of obtaining additional studies on the adult anatomy for comparison.

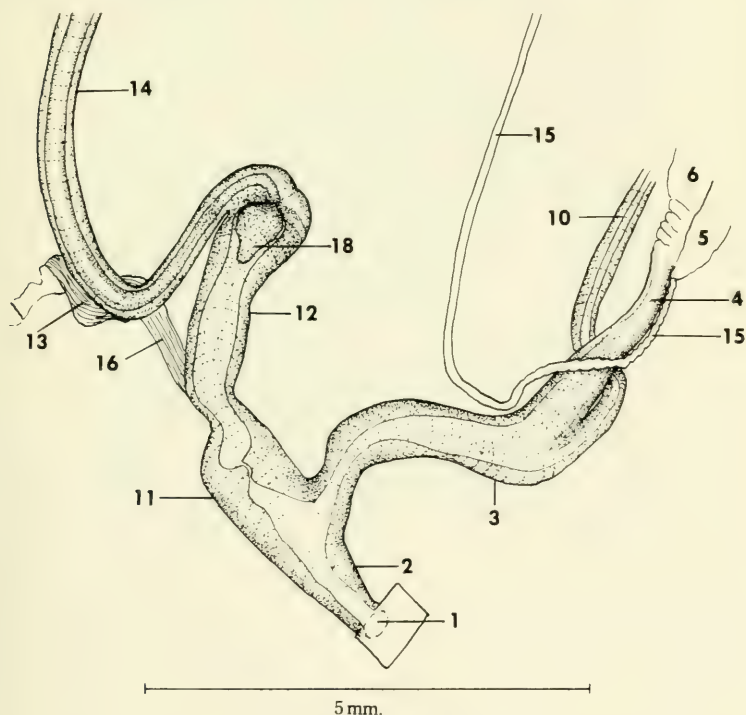


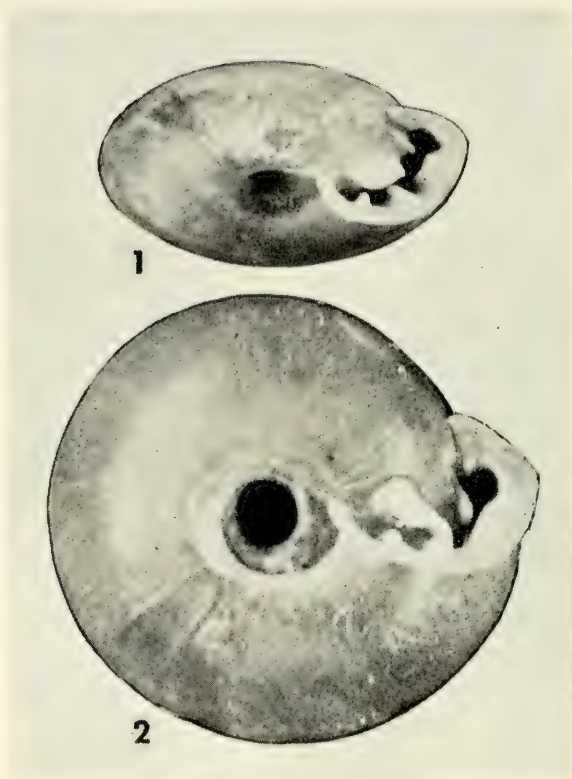
FIG. 2. *Ashmunella bequaerti* Clench and Miller. Lower portion of reproductive system enlarged. (Numbering as in Figure 1.)

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FIGS. 1-2. *Ashmunella bequaerti* Clench and Miller, from Goat Cave Canyon, Black Mt., Davis Mts., Texas. Fig. 1. Paratype, MCZ 260275 (4 X). Fig. 2. Holotype, MCZ 260274 (5.4 X).